DUNG BEETLES OF CUMBERLAND ISLAND, GEORGIA (COLEOPTERA: SCARABAEIDAE)[1]

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ABSTRACT

Seventeen species of dung beetles, a total of 71,074 specimens, were captured on Cumberland Island, Georgia, in September 1976. The small *Onthophagus tuberculifrons* was the most common species captured. *Phanaeus igneus* was the most common of the larger dung beetles. *Gongylonema verrucosum* was the most common helminth parasite using the beetles as intermediate hosts.

THE ISLAND

Cumberland Island is the largest and southernmost of Georgia's Golden Isles and one of the finest in terms of natural and recreational values. Located immediately north of Amelia Island, Florida, and 1 to 3 air miles east of the Georgia coastline, Cumberland was recently designated a National Seashore (Pennington 1977) to preserve its unique natural beauty. Cumberland is bounded on the east by the Atlantic Ocean, on the north by St. Andrew's Sound, on the west by the Cumberland River, which encompasses the Atlantic Intracoastal Waterway, and on the south by the St. Marys entrance to the St. Marys River. The island contains 22,000 acres, is 18.5 miles long, and ranges from 0.5 to 5 miles wide. About half the island is less than 10 feet above sea level, and most of this, about 5,600 acres, consists of salt marshes along the west side of the island. The remainder of the island consists of forested uplands (oak-pine communities) and some sand dunes that reach 50 feet above sea level.

Throughout the years, cattle, horses, pigs, and turkeys have been brought to the island. At present, these feral animals are free to roam and they have some adverse effects (e.g., dune erosion and destruction of loggerhead turtle nests) on its natural features (Anonymous 1976). Other mammals on Cumberland that provide food for dung beetles include deer, raccoons, squirrels, rabbits, and armadillos.

THE DUNG BEETLE FAUNA

One hundred pit traps baited with swine feces were placed throughout the island on 27 September 1976. Forty of the traps on the south end of the island were emptied and rebaited that same evening because of a heavy rain shower. The remaining 60 traps were emptied and rebaited the morning of the 28th. All traps were picked up the afternoon of September 28.

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The species and number of dung beetles captured were as follows: *Onthophagus tuberculifrons* Harold (40,650), *Ateuchus lecontei* (Harold) (14,741), *Phanaeus igneus* MacLeay (8,874), *Onthophagus oklahomensis* Brown (1,992), *Onthophagus taurus* Schreber (1,038), *Aphodius campestris* Blatchley (1,016), *Canthon pilularius* (Linnaeus) (755), *Boreocanthon depressipennis* (LeConte) (673), *Onthophagus pennsylvanicus* Harold (409), *Canthon chalcites* Haldeman (243), *Aphodius lividus* (Olivier) (212), *Copris minutus* (Drury) (134), *Onthophagus hecate* (Panzer) (121), *Deltochilum gibbosum* (Fabricius) (81), *Geotrupes egeriei* Germar (80), *Melanocanthon bispinatus* (Robinson) (36), and *Phanaeus vindex* MacLeay (19).

Onthophagus tuberculifrons was by far the most numerous of the dung beetles captured. This is surprising because *O. tuberculifrons* was the 12th and 13th most numerous beetle captured on Blackbeard Island (Fincher 1975) and Ossabaw Island (Fincher 1978 in preparation), respectively, during previous surveys. *Phanaeus igneus* was the most common of the larger dung beetles on Cumberland; next most common was *C. pilularius*. However, on Ossabaw, which contained a much larger cattle population than Cumberland, *C. pilularius* was more numerous than *P. igneus* by a 5 to 1 ratio. Blackbeard Island, which did not have cattle present to provide an enormous amount of food for dung beetles, had a ratio of *P. igneus* to *C. pilularius* of 9 to 1, the same as on Cumberland. *Onthophagus taurus*, a recent European introduction (Fincher and Woodruff 1975), was present on Cumberland and probably also now occurs on Blackbeard and Ossabaw, since it has spread throughout Georgia and has been found in South Carolina.

Approximately 10% of the captured beetles were examined to determine what species of helminth parasites were using dung beetles as intermediate hosts on Cumberland. *Gongylonema verrucosum* Molin was the most common parasite found in the beetles (68,486 larvae); next were *Physocephalus sexalatus* (Molin) (28,467 larvae), *Gongylonema pulchrum* Molin (7,130 larvae), and *Ascarops strongylina* (Rudolphi) (41 larvae). A few tapeworm larvae were seen, but no accurate count nor species determination was made.

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